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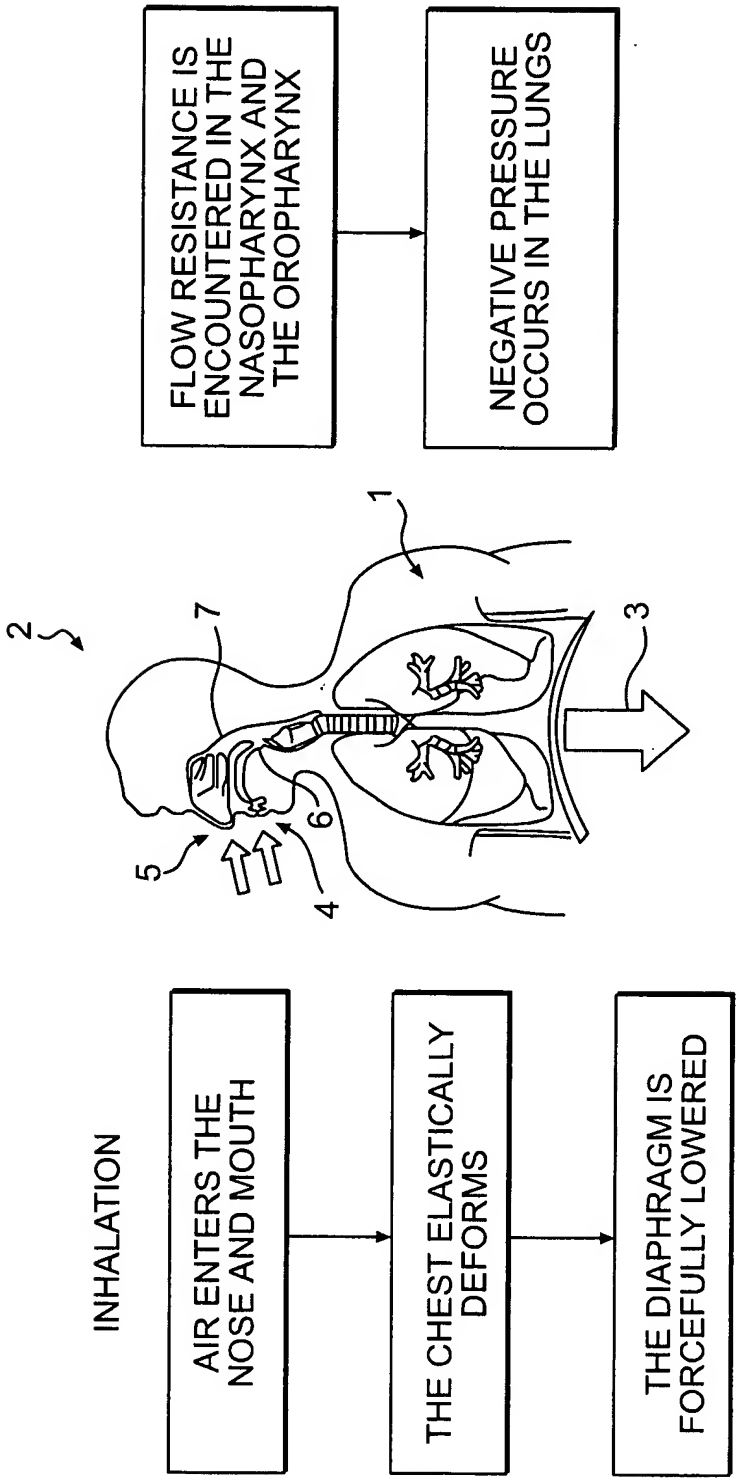

FIG. 1

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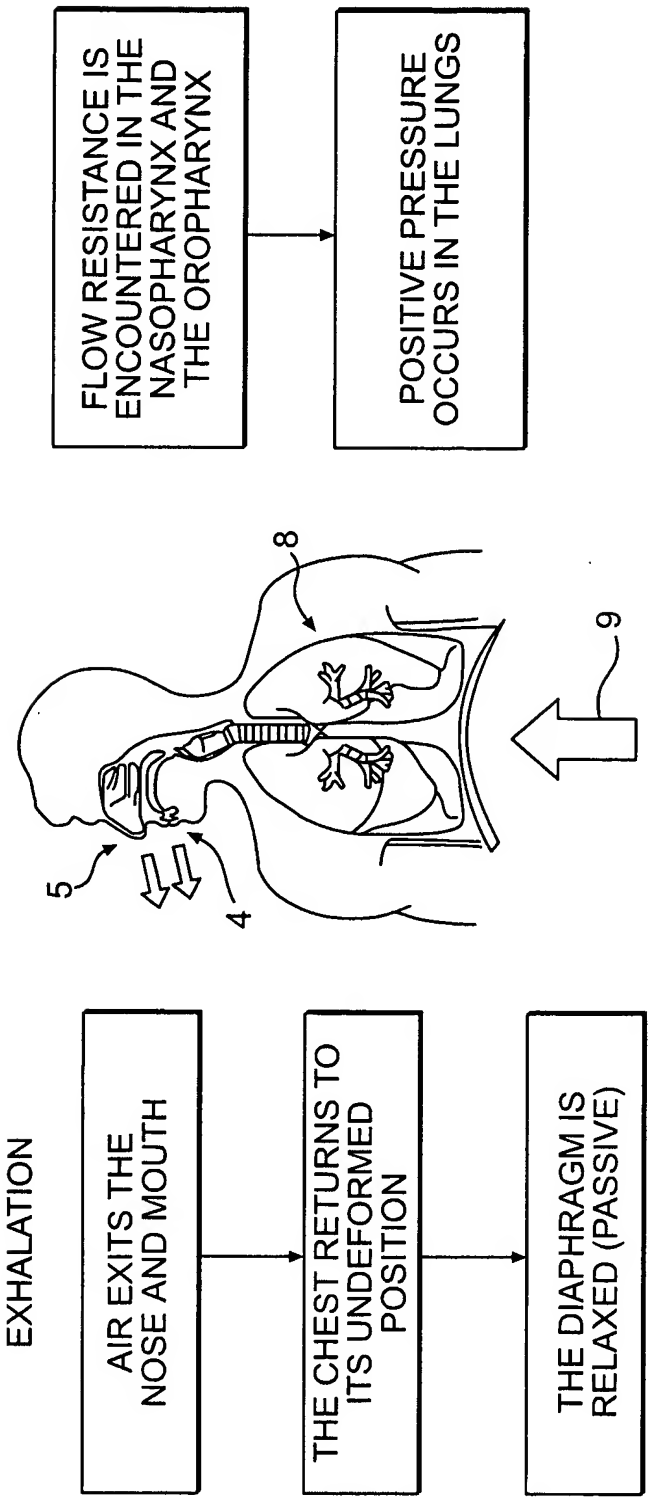

FIG. 2

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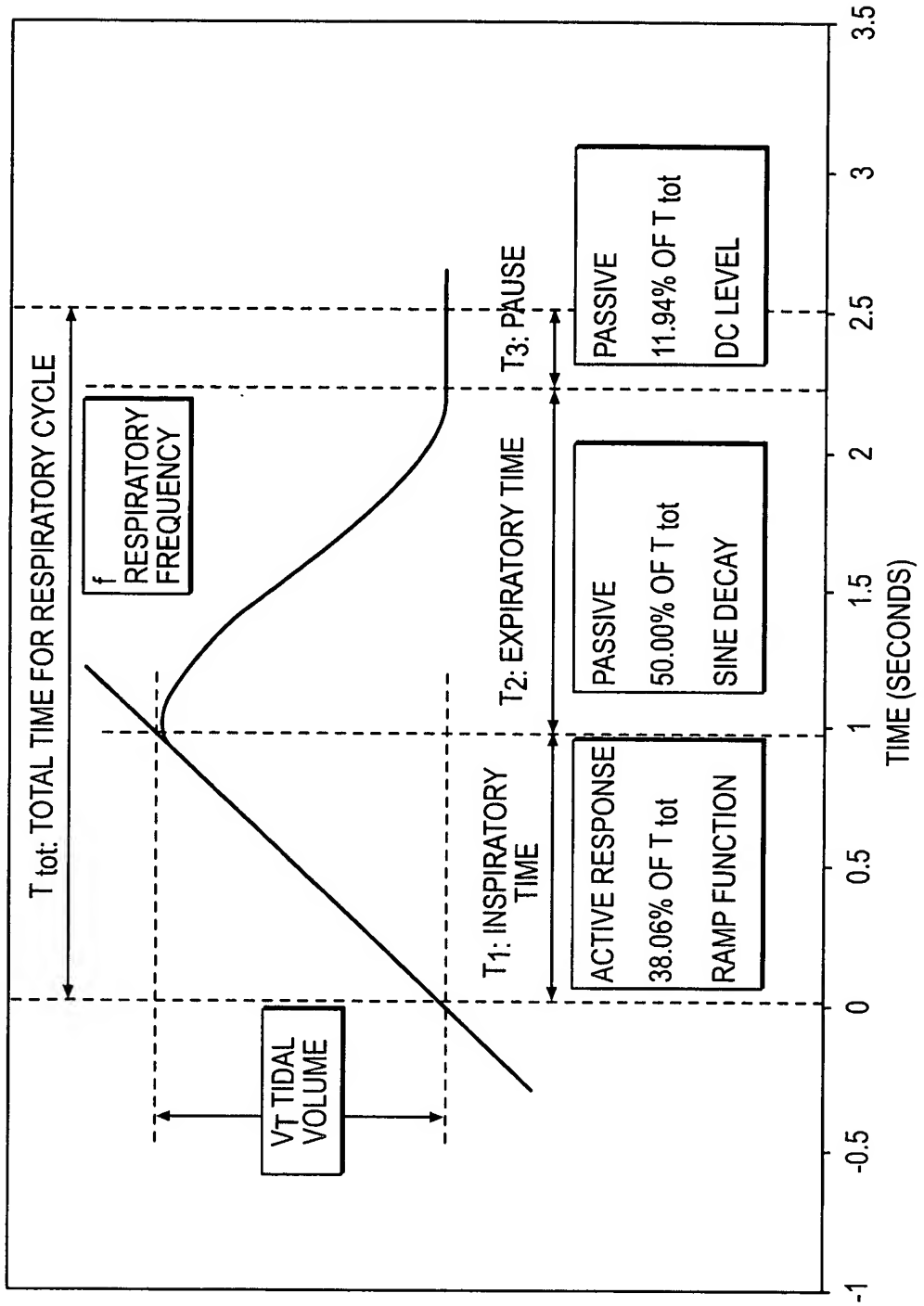

FIG. 3

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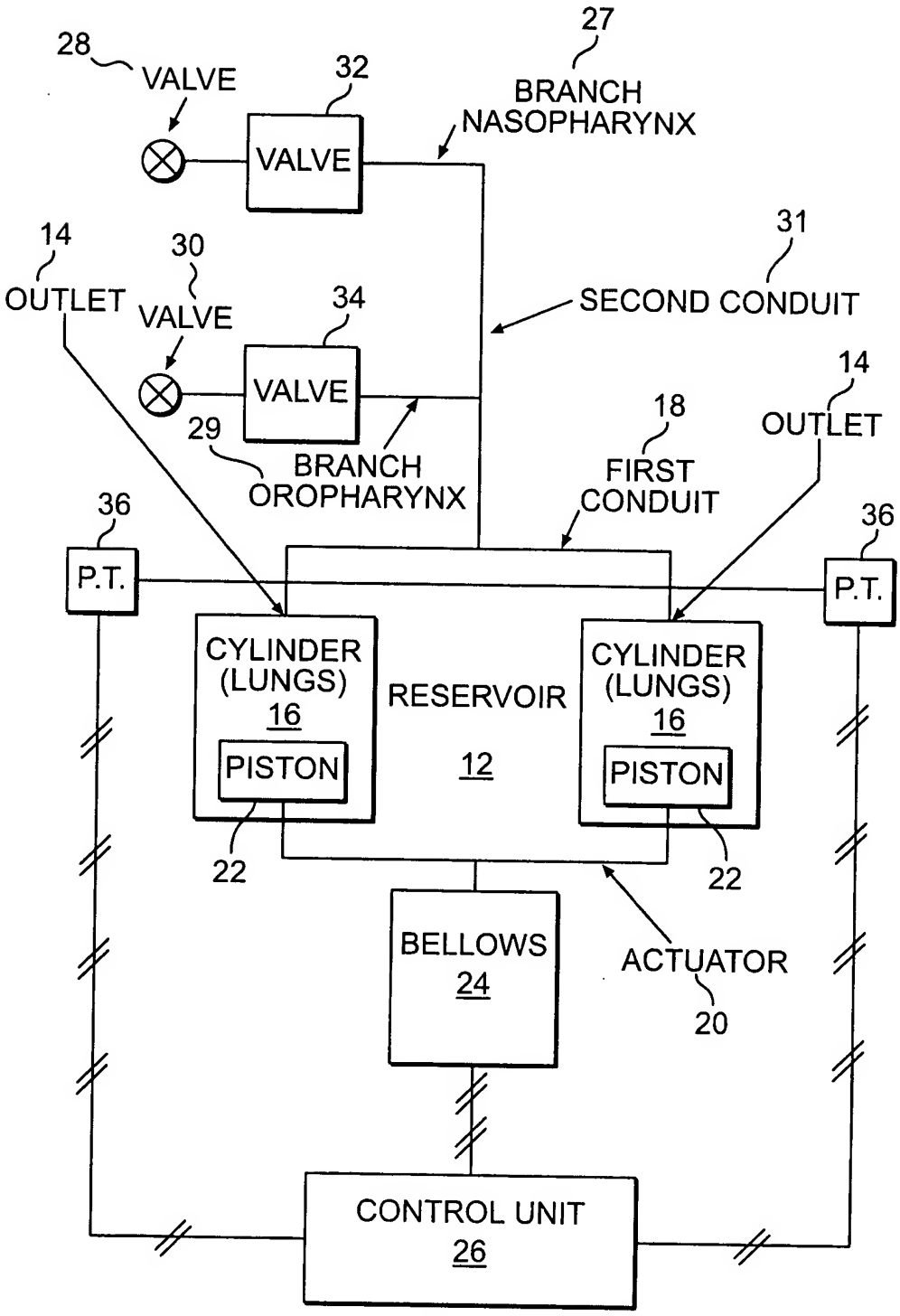

FIG. 4

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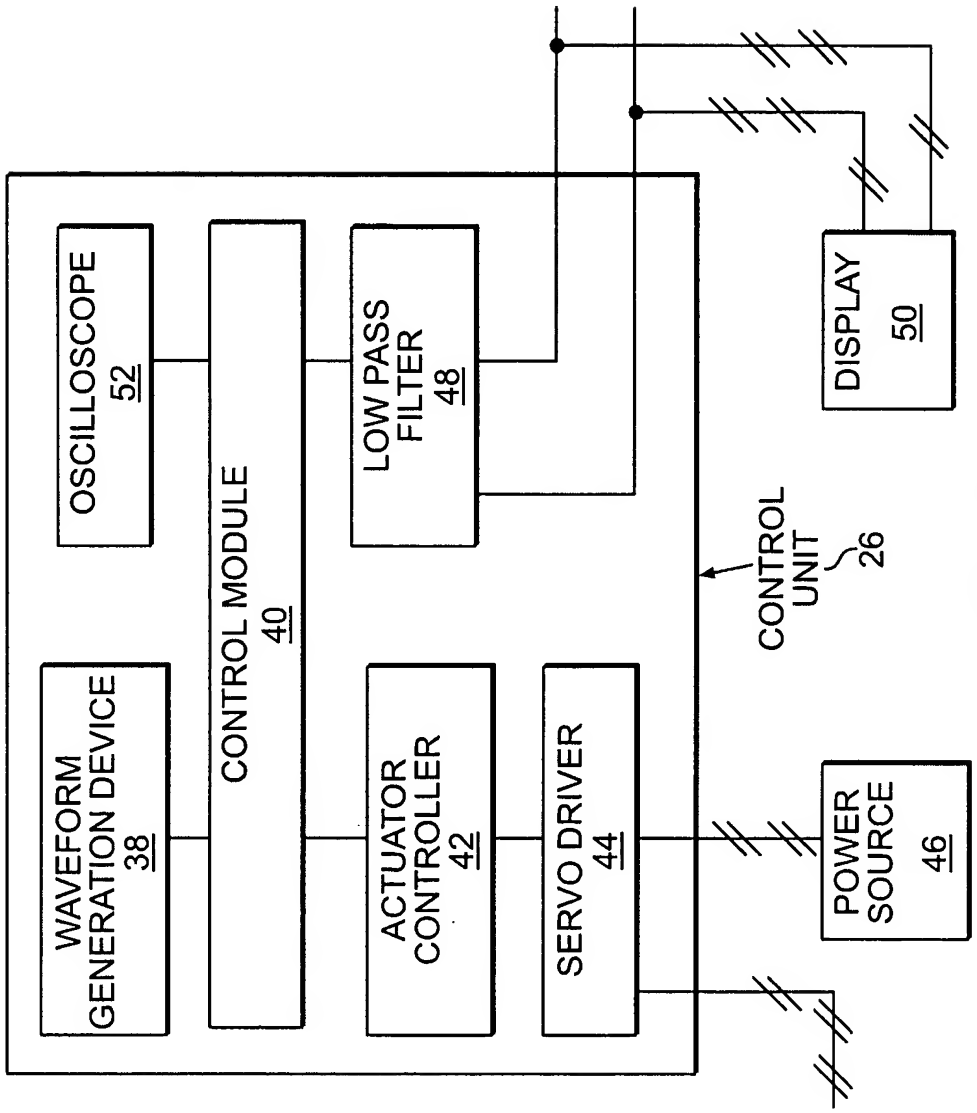

FIG. 5

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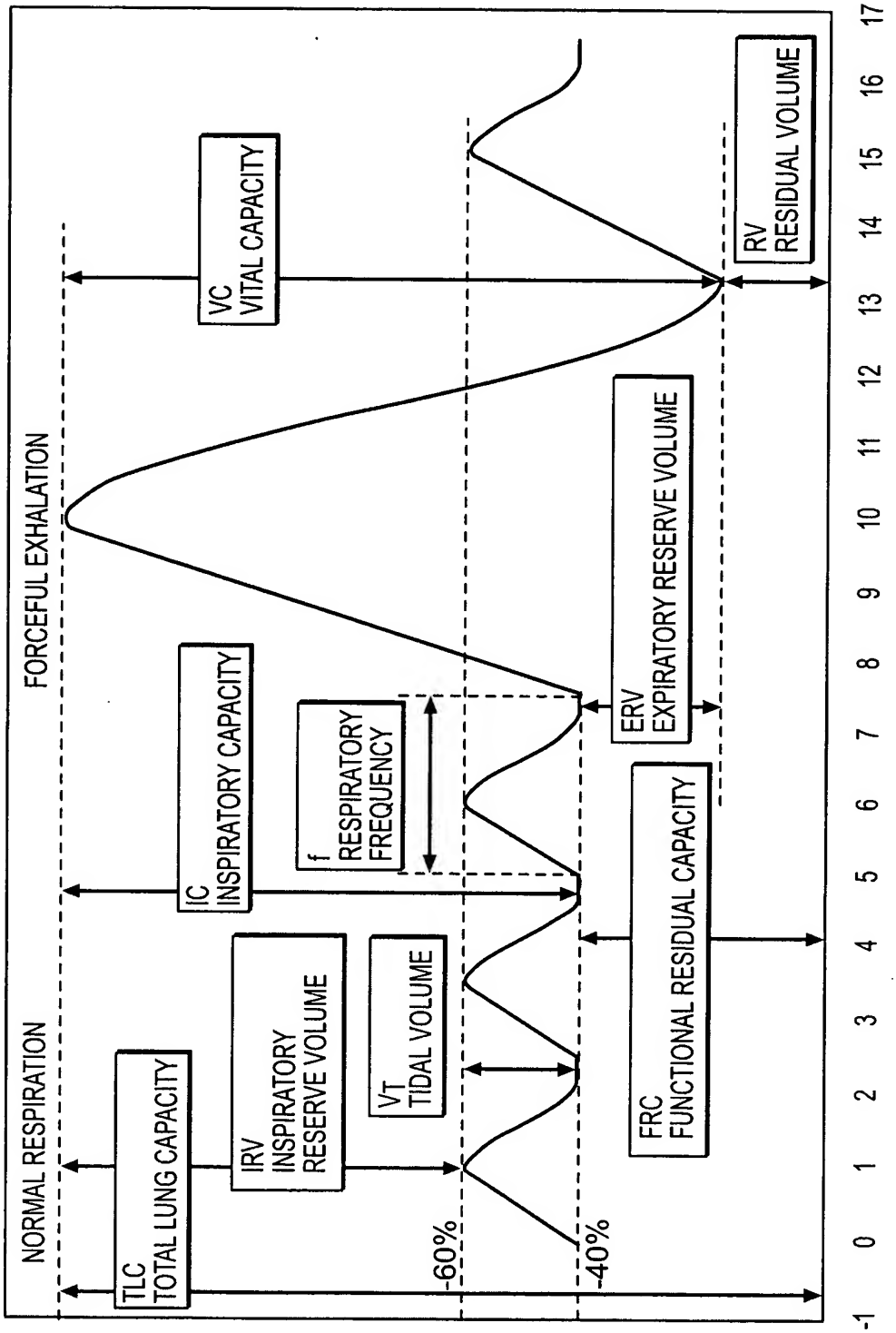

FIG. 6

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			AGE YEARS											
			1	2	3	4	5	6	7	8	9	10	11	12
LUNG CAPACITY														
TOTAL LUNG CAPACITY	TLC	(ml)	633	923	1213	1340	1467	1802	2138	2473	2798	3123	3448	3773
VITAL CAPACITY	VC	(ml)	475	693	910	1005	1100	1352	1603	1855	2099	2343	2586	2830
RESIDUAL VOLUME	RV	(ml)	158	231	303	335	367	451	534	618	700	781	862	943
TLC=VC + RV RV=0.25 * TLC														
NORMAL RESPIRATION														
FUNCTIONAL RESIDUAL CAPACITY	FRC	(ml)	263	398	532	596	660	831	1003	1174	1344	1515	1685	1855
TIDAL VOLUME	VT	(ml)	78	95	112	121	130	147	163	180	200	220	240	260
INSPIRATORY CAPACITY	IC	(ml)	370	526	681	744	807	971	1135	1299	1454	1609	1764	1918
INSPIRATORY RESERVE VOLUME	IRV	(ml)	292	431	569	623	677	824	972	1119	1254	1389	1524	1658
FREQUENCY (CYCLES/MINUTE)	f		24	23	22	21	20	19	19	18	18	17	17	16
TLC=FRC + IC TLC=FRC + VT+IRV IC=VT + IRV FRC=0.50 * TLC (UPRIGHT) FRC=0.40 * TLC (SUPINE)														
FORCEFUL EXHALATION														
EXPIRATORY RESERVE VOLUME	ERV	(ml)	105	167	229	261	293	381	468	556	645	734	823	912
FREQUENCY (CYCLES/MINUTE)	f													
TLC=IC + ERV + RV VC=ERV + IC														

CALIBRATION(MODEL LUNGS AND LINEAR ACTUATOR)			POSITION (INCHES)	VOLTAGE (V)	VOLUME (ml)	TOT VOLUME (ml)
BASELINE (0.00-INCHES, 0.0 VOLTS)			0.00	0.00	80	160
FULLY EXTENDED (6.00-INCHES, 5.0 VOLTS)			6.00	5.00	995	1990
V/ml					0.0055	0.0027
ml/V					183	366

NOTE: VOLUME= THE VOLUME OF 1 LUNG,
TOT VOL=THE VOLUME OF BOTH LUNGS

CONTINUED ON FIG. 7 CONT.

FIG. 7

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CONTINUED FROM FIG. 7

NORMAL RESPIRATION CYCLE													
TOTAL TIME (1 RESPIRATION CYCLE)	Ttot	(SEC)	2.500	2.609	2.727	2.857	3.000	3.103	3.214	3.333	3.429	3.529	3.636	3.750
INSPIRATORY TIME (T1), RAMP, 38.06%	T1	(SEC)	0.952	0.993	1.038	1.087	1.142	1.181	1.223	1.269	1.305	1.343	1.384	1.427
EXPIRATORY TIME (TE-T3), SINE DECAY, 50%	T2	(SEC)	1.250	1.304	1.364	1.429	1.500	1.552	1.607	1.667	1.714	1.765	1.818	1.875
PAUSE (TE-T2), DC LEVEL, 11.94%	T3	(SEC)	0.299	0.311	0.326	0.341	0.358	0.371	0.384	0.398	0.409	0.421	0.434	0.448
PROGRAM SETTINGS:														
RAMP														
START	RS	(V)	0.2814	0.6489	1.0164	1.1913	1.3661	1.8342	2.3024	2.7705	3.2357	3.7008	4.1660	4.631
END	RE	(V)	0.4945	0.9085	1.3224	1.5219	1.7213	2.2350	2.7486	3.2623	3.7821	4.3019	4.8217	5.341
SINE														
AMPLITUDE	SA	(V)	0.1066	0.1298	0.1530	0.1653	0.1776	0.2004	0.2231	0.2459	0.2732	0.3005	0.3279	0.3552
OFFSET	SO	(V)	0.3880	0.7787	1.1694	1.3566	1.5437	2.0346	2.5255	3.0164	3.5089	4.0014	4.4939	4.9863
FREQ (Hz)	SF	(Hz)	0.4000	0.3833	0.3667	0.3500	0.3333	0.3222	0.3111	0.3000	0.2917	0.2833	0.2750	0.2667
PHASE	SP	(deg)	90	90	90	90	90	90	90	90	90	90	90	90
DC LEVEL														
OFFSET	DO	(V)	0.2814	0.6489	1.0164	1.1913	1.3661	1.8342	2.3024	2.7705	3.2357	3.7008	4.1660	4.631

REPLACEMENT DRAWINGS
Title: Mechanical Lungs
Inventor: John E. OWENS, et al.
U.S. Application No.: 10/014,421

FIG. 7 CONT.

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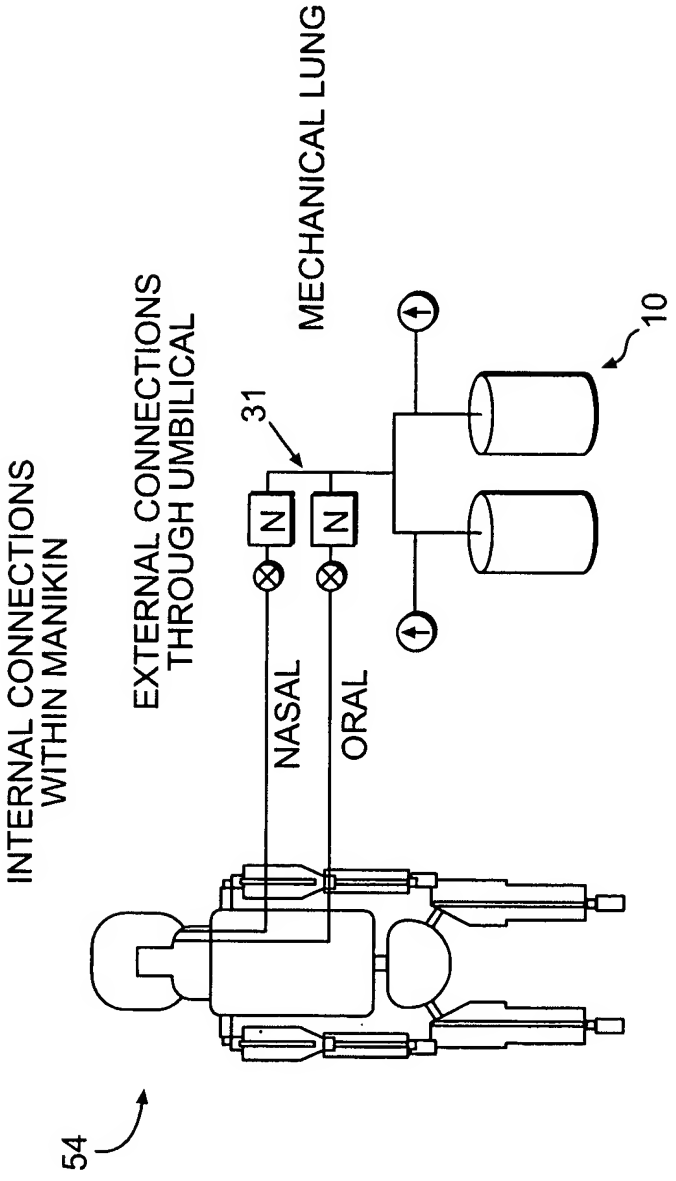

FIG. 8